



BRAZIL

COOL DOWN THE PLANET – **HEAT UP YOUR ECONOMY**
Energy efficiency improvement for cooling appliances

1

NATIONAL ANNUAL SAVINGS ACHIEVABLE WITH AN IMPROVED POLICY FRAMEWORK



Save electric energy worth **14 billion US\$**



Reduce CO₂ emissions by **13,3 million tonnes**



Reduce electricity use

→ by over **77,8 TWh**

→ more than **16 %** of current national electricity use

... equivalent to

7,370,000

passenger cars



... equivalent to

135 power plants

[100 MW]



2

SHARES IN SAVINGS FROM EACH PRODUCT



Domestic Refrigerators

21%



Room air Conditioners

70%



Ceiling Fans

9%

3

POTENTIAL ANNUAL SAVINGS PER HOUSEHOLD (assuming the use of one of each products)



Reduce electricity use

→ by over **1,810 kWh**



Save on electricity bills by **330 US\$**

THE PATHWAY TO ENERGY EFFICIENCY



efficient appliances
& equipment

Global Partnership Programme

Country Specific Data and Input Assumptions for Brazil




GENERAL INFORMATION

Population	198.7 million
GDP per capita	11,320 US\$
Electrification level	99 %

ELECTRICITY MARKET

Electricity tariff	0.18 US\$ / kWh
CO ₂ Emission Factor	0.14 kg / kWh
Transmission and distribution loss factor	16 %

BASELINE OF CURRENT PRODUCTS

Product	Price (US\$)	Unit Energy Consumption (kWh / year)	Appliance Lifetime (years)	Type of Product
 Air conditioners	650	3,098	12	Window / wall air conditioner with 3.5 kW (12,000 Btu/hour or 1 ton) cooling capacity
 Fans	100	88	10	Ceiling fan
 Refrigerators	600	560	15	2-door top-mount 300-liter refrigerator-freezer

METHODOLOGY

The analysis uses CLASP's Policy Analysis Modeling System (PAMS) to forecast the impacts from implementing policies that improve the energy efficiency of new household air conditioners, refrigerators, and ceiling fans. It is assumed policies are implemented in 2020 and saving potentials are from 2030. The potential savings are based on a best-available technology scenario, including all expenditures associated with purchase and use of the product.

ASSUMPTIONS AND DATA SOURCES

- **Population and GDP per capita data** (2012) comes from the World Bank.
- **Electrification level** was provided by country representatives (when available) and the International Energy Agency (IEA).
- **Market size** was determined by data provided by country representatives (when available); industry partners; International Copper Association (ICA); UN Comtrade database; Inter-American Development Bank; household penetration forecasts generated by PAMS from population, climate, and macroeconomic indicators.
- **Baseline price, unit energy consumption (UEC), appliance lifetime** were provided by country representatives (when available); industry partners; ICA; and Lawrence Berkeley National Laboratory. The business-as-usual scenario assumes a 1 per cent annual improvement in UEC.
- **Electricity tariff** was provided by country representatives (when available); IEA; and internet research.
- **Transmission and distribution loss factor** is a regional average calculated from electricity production and consumption data published by the International Energy Agency (IEA).
- **CO₂ Emission Factor** was provided by UNEP and extrapolations were made by CLASP for seven small island nations.
- **Consumer discount rate** was derived from the Human Development Index, United Nations Development Programme (2012). The rate varies by country from 7% to 13%, with less developed countries having higher rates.



in support of

SUSTAINABLE
ENERGY FOR ALL



BRAZIL



ENERGY EFFICIENCY POLICY ASSESSMENT For cooling appliances



DOMESTIC REFRIGERATORS

	Policy in place	Policy type	Mandatory or voluntary	In force
Energy efficiency standards	Yes	MEPS	Mandatory	2011
Supporting policies	Yes	Comparative label Endorsement label	Mandatory Voluntary	2006 2010
Monitoring, verification and enforcement	Yes	Monitoring and Enforcement	Mandatory	2011
Environmentally sound management	Yes	Pilot refrigerator recycling facility	N / A	2013

Comment:

The legislation provides measures for monitoring and enforcement of the standards and labelling. INMETRO is the entity responsible for implementing these norms for imported equipment as well as products manufactured in the country.



ROOM AIR CONDITIONERS

	Policy in place	Policy type	Mandatory or voluntary	In force
Energy efficiency standards	Yes	MEPS	Mandatory	2011
Supporting policies	Yes	Comparative label Endorsement label	Mandatory Voluntary	2013 2011
Monitoring, verification and enforcement	Yes	Enforcement	Mandatory	2011
Environmentally sound management	Yes	Recycling scheme (<i>Plan Acuerdo Sectorial</i>)	N / A	2013

Comment:

No information available.



CEILING FANS

	Policy in place	Policy type	Mandatory or voluntary	In force
Energy efficiency standards	No			
Supporting policies	Yes	Comparative label Endorsement label	Mandatory Voluntary	2008 2008
Monitoring, verification and enforcement	Yes	Verification	Mandatory	2012
Environmentally sound management	Yes	Recycling scheme (<i>Plan Acuerdo Sectorial</i>)	N / A	2013

Comment:

The above policies apply to ceiling fans only, but complementary policies exist for table and wall fans